

CLAIMS

WHAT IS CLAIMED IS:

1. A cathodic protection system for internal surfaces of a pipeline, said pipeline having an internal volume, said cathodic protection system comprising:
 - (a) a flexible anode assembly having a first and a second end, said anode assembly comprising at least one flexible anode wire having a first end and a second end;
 - (b) a first removable pressure seal fitting for the first end of the anode assembly, said first pressure seal fitting providing for electrical contact between the first end of the anode assembly and a first contact outside of the internal volume of the pipeline;
 - (c) a second removable pressure seal fitting for the second end of the anode assembly, said second pressure seal fitting providing for electrical contact between the second end of the anode assembly and a second contact outside of the internal volume of the pipeline;
 - (d) a DC power source;
 - (e) a first anode conductor attached between the first contact and the DC power source; and
 - (f) a second anode conductor attached between the second contact and the DC power source.
2. A cathodic protection system according to claim 1, further comprising a flexible, non-electrically conductive anode housing, said housing substantially

surrounding the anode wire and extending generally from said first pressure seal fitting to said second pressure seal fitting.

3. A cathodic protection system according to claim 1, wherein the anode wire is mixed metal oxide.

4. A cathodic protection system according to claim 3, wherein the anode wire has a copper core.

5. A cathodic protection system according to claim 1, wherein the anode wire is platinum coated titanium.

6. A cathodic protection system according to claim 5, wherein the anode wire has a copper core.

7. A cathodic protection system according to claim 1, wherein the anode wire is platinum coated niobium.

8. A cathodic protection system according to claim 7, wherein the anode wire has a copper core.

9. A cathodic protection system according to claim 2, wherein the anode housing is fabricated from a perforated, semi-rigid plastic material.

10. A cathodic protection system according to claim 2, wherein the anode housing is constructed from plastic mesh tubing.

11. A cathodic protection system according to claim 1, wherein said first and said second pressure seal fittings are adapted to permit installation, removal, and repair of the anode assembly.

12. A cathodic protection system according to claim 1, wherein the DC power source includes a rectifier.

13. A cathodic protection system according to claim 1, including a waterproof coating over at least one the first pressure seal fitting and the second pressure seal fitting such that the anode assembly is adapted for underground use.

14. A cathodic protection system according to claim 1, including at least one reference electrode to measure cathodic protection levels and to monitor the anode assembly.

15. A cathodic protection system according to claim 1, including a separate anode cable to provide supplemental tensile strength to the anode wire.

16. A cathodic protection system for internal surfaces of a pipeline, said pipeline having an internal volume, said cathodic protection system comprising:

- (a) an flexible anode assembly having a first and second end and comprising at least one flexible anode wire having a first end and a second end;
- (b) a first removable pressure seal fitting for the first end of the anode assembly, said first pressure seal fitting providing for electrical contact between the first end of the anode assembly of the pipeline and a first contact outside of the internal volume of the pipeline;
- (d) a DC power source;
- (e) a first anode conductor attached between the first contact and the DC power source; and
- (f) said length of said anode assembly of a greater dimension than that of a diameter of the pipeline and free to move within the pipeline due to the flexibility of the anode assembly.

17. A cathodic protection system according to claim 16, further comprising a flexible, non-electrically conductive anode housing, said housing substantially surrounding the anode wire and extending generally from said first pressure seal fitting to said second end of said anode assembly.

18. A cathodic protection system according to claim 16, wherein the anode wire is mixed metal oxide.

19. A cathodic protection system according to claim 18, wherein the anode wire has a copper core.

20. A cathodic protection system according to claim 16, wherein the anode wire is platinum coated titanium.

21. A cathodic protection system according to claim 20, wherein the anode wire has a copper core.

22. A cathodic protection system according to claim 16, wherein the anode wire is platinum coated niobium.

23. A cathodic protection system according to claim 22, wherein the anode wire has a copper core.

24. A cathodic protection system according to claim 17, wherein the anode housing is fabricated from a perforated, semi-rigid plastic material.

25. A cathodic protection system according to claim 17, wherein the anode housing is constructed from plastic mesh tubing.

26. A cathodic protection system according to claim 16, wherein said first pressure seal fitting is adapted to permit installation, removal, and repair of the anode assembly.

27. A cathodic protection system according to claim 16, wherein the DC power source includes a rectifier.

28. A cathodic protection system according to claim 16, including a waterproof coating over the first pressure seal fitting such that the anode assembly is adapted for underground use.

29. A cathodic protection system according to claim 16, including at least one reference electrode to measure cathodic protection levels and to monitor the anode assembly.

30. A cathodic protection system according to claim 16, including a separate anode cable to provide supplemental tensile strength to the anode wire.